



VIEW Certified Configuration Guide

Motorola

RFS7000 Wireless Switch
with AP300

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Introduction

Polycom's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between SpectraLink Wireless Telephones and WLAN infrastructure products.

The products listed below have been thoroughly tested in Polycom's lab using the VIEW Certification Test Plan. This document details how to configure the RFS7000 Wireless Switch and the AP300 access point (AP) with SpectraLink Wireless Telephones.

Certified Product Summary

Manufacturer:	Motorola: http://www.motorola.com/products.jsp			
Approved products:	RFS7000 Wireless Switch with AP300 [†]			
RF technology:	802.11b/g/a			
Radio:	2.4 GHz (802.11b/g), 5 GHz (802.11a)			
Security:	WPA-PSK, WPA2-PSK			
AP and WLC software version certified:	1.1.0.0-038R			
SpectraLink handset models certified: **	e340/h340/i640	8020/8030		
SpectraLink handset software certified:	89.135	122.017 or greater		
SpectraLink radio mode:	802.11b	802.11b	802.11g	802.11a
Maximum telephone calls tested per AP:	11	11	12 *	
Network topology:	Switched Ethernet (recommended)			

[†] Denotes products directly used in VIEW Certification testing.

* Maximum calls tested during VIEW Certification. The certified product may actually support a higher number of maximum calls for 802.11a and 802.11g radio modes.

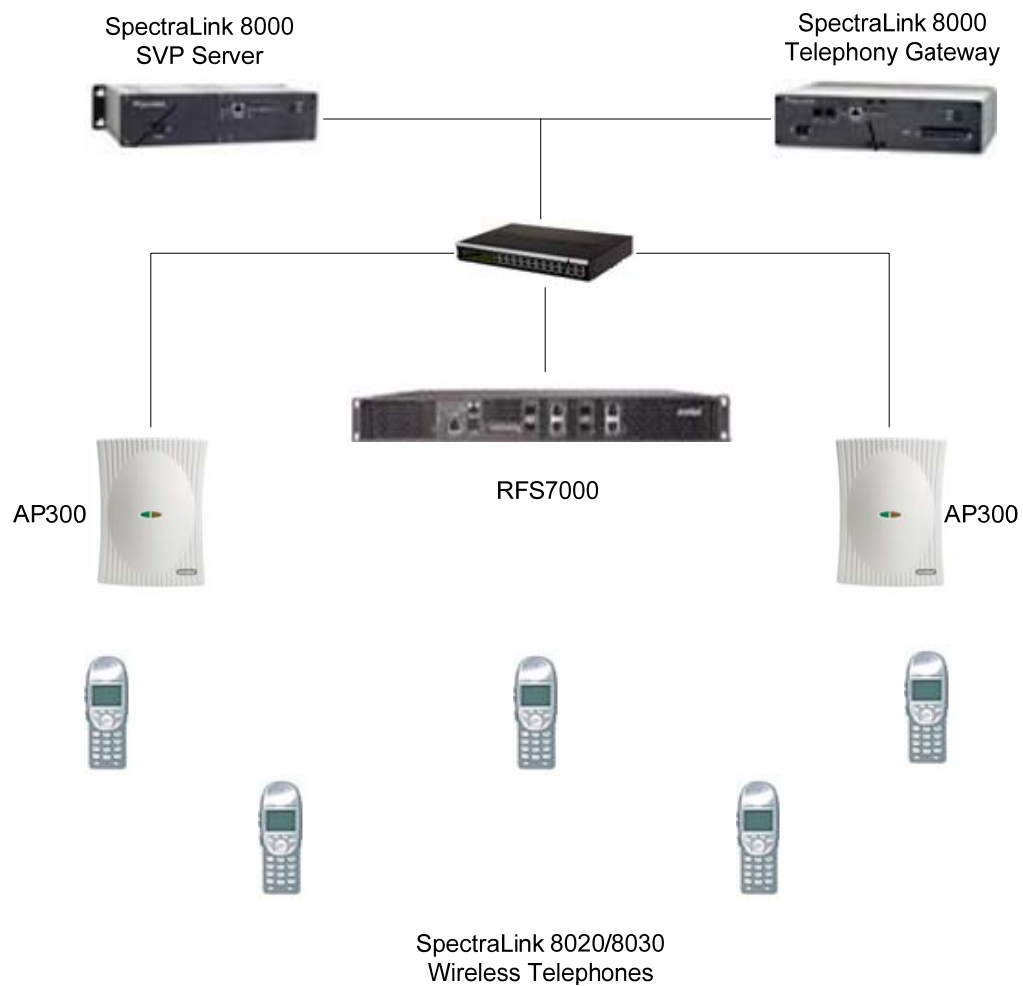
** SpectraLink handset models 8020/8030, e340/h340/i640 and their OEM derivatives are VIEW Certified with the WLAN hardware and software identified in the table. Throughout the remainder of this document they will be referred to collectively as "SpectraLink Wireless Telephones".

Service Information

If you encounter difficulties or have questions regarding the configuration process, please contact Motorola technical support at (800) 653-5350, or at <http://www.symbol.com/services/contactsupport>.

Network Topology

The following topology was used during VIEW Certification testing.



Configuration Settings

Installing a New Image

The VIEW Certified firmware release can be obtained from Motorola's Developer Zone at

<http://support.symbol.com/support/product/softwaredownloads.do>.

Upgrading the RFS7000 Wireless Switch to the new firmware can be done through the Web interface or through the command line interface (CLI). Place the image on the FTP server, TFTP server or through Compact Flash card, depending on the file transfer mechanism chosen.

Installing firmware through the CLI

1. Enter your username and password to log into the CLI. The defaults are login: **cli user**, admin password: **superuser**. The serial interface parameters are **19200, 8, n, 1, n**.

2. Connect the FTP/TFTP server to subnet 1.

- a. For TFTP, issue the following commands:

```
RFS7000>en
RFS7000#upgrade
tftp://TFTP_SERVER_IP_ADDR/RFS7000_FIRMWARE_FILENAME
```

- b. For FTP, issue the following commands:

```
RFS7000>en
RFS7000#upgrade
ftp://FTP_USERNAME:FTP_PASSWD@FTP_SERVER_IP_ADDR/
_FIRMWARE_FILENAME
```

3. After the upgrade is successful issue the following command:

```
RFS7000#reload
```

Installing firmware through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane under **Switch**, click **Firmware**.
3. In the **Firmware** screen, click the **Update Firmware** button located at the lower right of the page.
4. In the **Update** dialog box, select **TFTP** from the **Using** drop-down list.
5. At **File**, enter the RFS7000 firmware image filename.
6. At **IP Address**, enter the TFTP server IP address.
7. Click the **Do Update** button.
8. After the RFS7000 Wireless Switch performs the upgrade, navigate to the **Switch** window.

The screenshot displays the RFS7000 RF Switch web interface. On the left is a navigation pane with a tree view containing 'Switch' (expanded), 'Ports', 'Configurations', 'Firmware' (selected), 'File Management', 'Automatic Update', 'Network', 'Services', 'Security', 'Management Access', and 'Diagnostics'. Below this is a 'Login Details' section with 'Connect To: 192.168.2.103' and 'User: admin'. At the bottom of the left pane are 'Save', 'Logout', and 'Refresh' buttons.

The main content area is titled 'Switch > Firmware'. It features a table with the following data:

Image	Version	Current Boot	Next Boot	Built Time	Install Time
Primary	1.0.0.0-342R	✗	✗	Sun Apr 22 18:06:54 2007 UTC	Sun Apr 29 17:58:51 2007 UTC
Secondary	1.1.0.0-038R	✓	✓	Thu Jan 10 08:02:24 2008 UTC	Mon Oct 15 21:25:30 2007 UTC

Below the table is an 'Update' dialog box. It has a title bar 'Switch > Firmware > Update'. Inside, the 'From' dropdown is set to 'Server'. The 'File' field contains 'RFS7000-1.1.0.0-038R.img'. The 'Using' dropdown is set to 'TFTP' and the 'Port' field is '69'. The 'IP Address' field contains '192.168.2.100'. There are empty fields for 'UserID', 'Password', and 'Path'. At the bottom of the dialog are 'Do Update', 'Close', and 'Help' buttons.

At the bottom of the main content area, there are 'Edit', 'Update Firmware' (highlighted with a red box), 'Remove Patch', and 'Help' buttons.

The footer of the applet reads 'Wireless Management Applet'.

9. In the navigation pane under **Switch**, click **Configurations**.

10. Click the **Restart** button to reboot the switch.

The screenshot displays the web interface of an RFS7000 RF Switch. The left navigation pane shows the 'Switch' menu expanded, with 'Configurations' selected. The main content area is titled 'Switch' and contains a 'System' configuration form. The form includes fields for System Name, Location, Contact, Uptime, Firmware, AP Licenses, Date, Time, Time Zone, and Country. A 'Restart' button is located at the bottom of the form. The bottom of the interface shows login details and a message area.

System	
System Name	RFS7000
Location	
Contact	
Uptime	39 days, 21 hours, 42 minutes and 26 seconds
Firmware	1.1.0.0-038R
	Copyright (c) 2007 Motorola, Inc.
AP Licenses	256
Date (MM/DD/YYYY)	03/04/2008
Time (HH:MM:SS)	19:36:24
Time Zone	Etc/UTC
Country	United States-us
<input type="button" value="Restart"/>	

Login Details

Connect To: 157.235.92.119

User: admin

Message

Installing the AP license through the CLI

For the RFS7000 to adopt AP300s, a license has to be installed. Obtain the license key and then install based on the following steps:

```
RFS7000>en
RFS7000#conf t
RFS7000(config)#license AP <LICENSE_KEY>
```

Installing the AP license through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane under **Switch**, click **Licenses**.
3. Enter the **License Key** and **Feature Name** as seen in the figure below.
4. Click the **Install** button to install the license.

RFS7000 RF Switch

Switch > Licenses

Install License

License Key: 010636d1e252f684aa5998c802952

Feature Name: AP

Serial Number: 6283529900094

Feature Licenses

Feature Name	License Count	License Usage	License Key
AP	256	0	05a79e40 09296017 0c49015b c7a4201d 22725...

Wireless Management Applet

Configuring the Wireless Switch from the Default Configuration

Radio Settings

Configuring radio settings through the CLI

The parameters for default-11bg will be configured on the switch. When an AP is adopted on the switch it will inherit all the default-11bg or 11a parameters. To configure radio settings for the wireless switch, use the following commands.

When SpectraLink Wireless Telephones are configured for 802.11b & b/g mixed mode:

```
RFS7000>en
RFS7000#conf t
RFS7000 (config)#wireless
RFS7000 (config-wireless)#country-code us
RFS7000 (config-wireless)#radio add 1 00-A0-F8-CD-ED-EC
11bg ap300
RFS7000 (config-wireless)#radio 1 beacon-interval 100
RFS7000 (config-wireless)#radio 1 dtim-period 3
RFS7000 (config-wireless)#radio 1 bss 1 1
RFS7000 (config-wireless)#radio 1 speed basic1 basic2
basic5p5 6 9 basic11 12 18 24 36 48
```

When SpectraLink Wireless Telephones are configured for 802.11g only mode:

```
RFS7000>en
RFS7000#conf t
RFS7000 (config)#wireless
RFS7000 (config-wireless)#country-code us
RFS7000 (config-wireless)#radio add 1 00-A0-F8-CD-ED-EC
11bg ap300
RFS7000 (config-wireless)#radio 1 beacon-interval 100
RFS7000 (config-wireless)#radio 1 dtim-period 3
RFS7000 (config-wireless)#radio 1 bss 1 1
RFS7000 (config-wireless)#radio 1 speed 1 2 5p5 basic6 9
11 basic12 18 basic24 36 48 54
```

When SpectraLink Wireless Telephones are configured for 802.11a mode:

```
RFS7000>en
RFS7000#conf t
RFS7000 (config)#wireless
RFS7000 (config-wireless)#country-code us
RFS7000 (config-wireless)#radio add 2 00-A0-F8-CD-ED-EC
11a ap300
RFS7000 (config-wireless)#radio 2 beacon-interval 100
RFS7000 (config-wireless)#radio 2 dtim-period 3
RFS7000 (config-wireless)#radio 2 bss 1 1
RFS7000 (config-wireless)#radio 2 speed basic6 9 basic12
18 basic24 36 48 54
```

Channel selection

You can specify the desired channel manually by using the following commands.

For 802.11b/g radio:

```
RFS7000(config-wireless)#radio 1 channel-power indoor 11
20
```

For 802.11a radio:

```
RFS7000(config-wireless)#radio 2 channel-power indoor 36
17
```

For configuring power and data rate settings, please consult your facility's RF site survey, designed for voice traffic, to determine if you have sufficient coverage to support all data rates. SpectraLink Wireless Telephones require the following minimum dBm reading to support the corresponding **Basic** data rate setting in the access point.

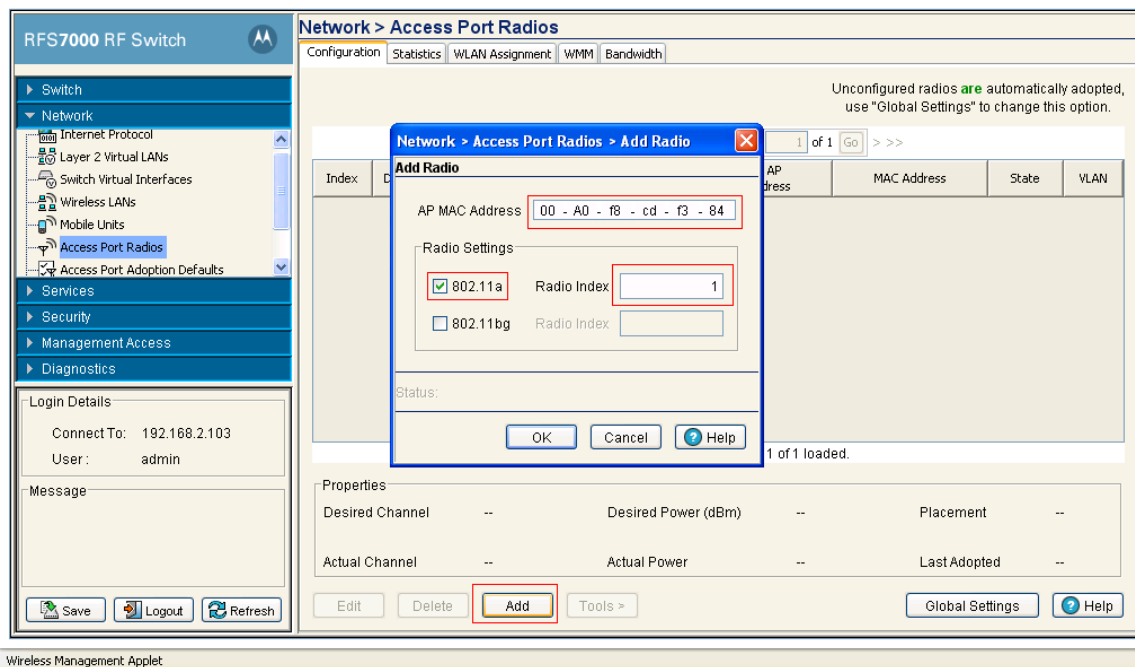
802.11 Radio Standard	Minimum Available Signal Strength (RSSI)	Maximum "Basic" Data Rate
802.11b	-70 dBm	1 Mb/s
	-60 dBm	11 Mb/s
802.11g	-63 dBm	6 Mb/s
	-47 dBm	54 Mb/s
802.11a	-60 dBm	6 Mb/s
	-45 dBm	54 Mb/s



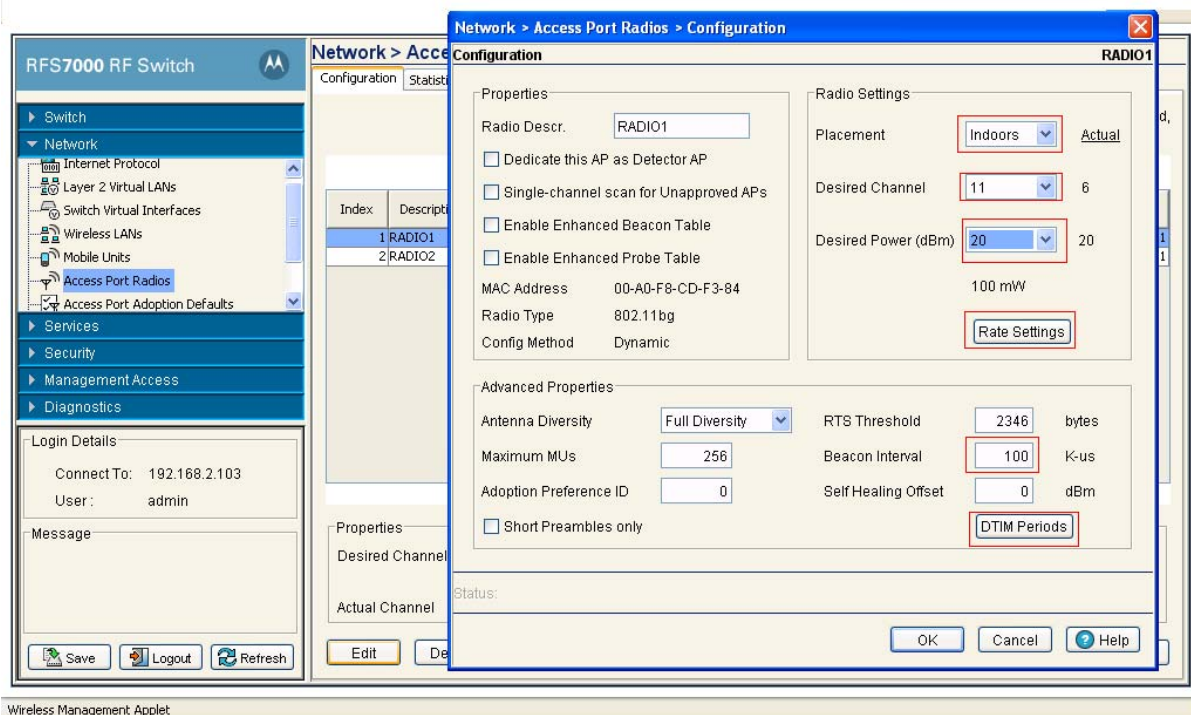
For additional details on RF deployment please see the [Deploying Enterprise-Grade Wi-Fi Telephony](#) white paper and the [Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones](#).

Configuring radio settings through the Web interface

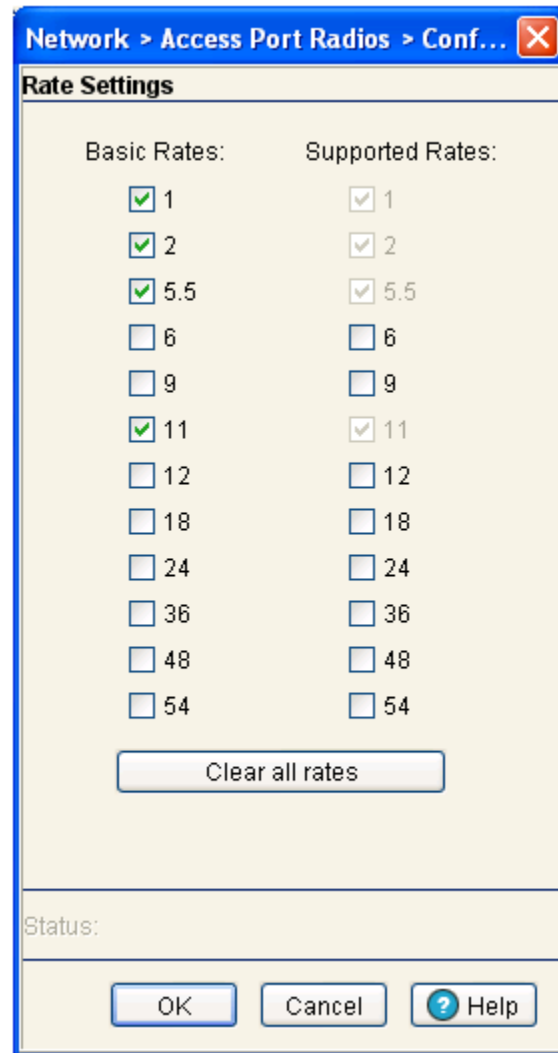
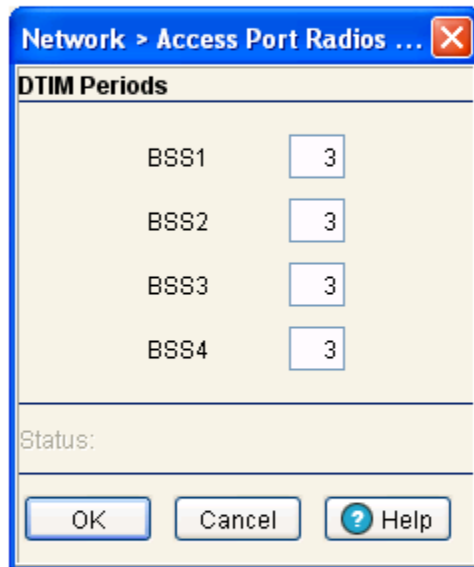
1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane under **Network**, click **Access Port Radios**.
3. In the **Configuration** screen, click the **Add** button.
4. In the **Add Radio** dialog box, set the **AP MAC Address** (same for 802.11a and 802.11bg).
5. Select the appropriate **Radio Setting** to match the radio setting on the SpectraLink Wireless Telephones:
 - a. Select the **802.11a** check box if the handsets are configured for 802.11a.
 - b. Select the **802.11bg** check box if the handsets are configured for 802.11g only or 802.11b & b/g mixed mode.
6. Click **OK**.



7. Once the APs are adopted they should appear in the **Access Port Radios** screen in the **Configuration** tab.
8. Select the appropriate radio (**Radio1** for 802.11b/g or **Radio2** for 802.11a).
9. Click the **Edit** button.
10. In the **Configuration** dialog box, select the **Placement**, **Desired Channel**, **Desired Power** and **Beacon Interval** settings from the drop-down lists.



11. Click the **Rate Settings** button.
12. In the Rate settings dialog box, set the desired **Basic** and **Supported Rates**. Click **OK**.
13. Click the **DTIM Periods** button.
14. In the **DTIM Periods** dialog box, set each value to **3**. Click **OK**.



For configuring power and data rate settings, please consult your facility's RF site survey, designed for voice traffic, to determine if you have sufficient coverage to support all data rates. SpectraLink Wireless Telephones require the following minimum dBm reading to support the corresponding **Basic** data rate setting in the access point.

802.11 Radio Standard	Minimum Available Signal Strength (RSSI)	Maximum "Basic" Data Rate
802.11b	-70 dBm	1 Mb/s
	-60 dBm	11 Mb/s
802.11g	-63 dBm	6 Mb/s
	-47 dBm	54 Mb/s
802.11a	-60 dBm	6 Mb/s
	-45 dBm	54 Mb/s



For additional details on RF deployment please see the [Deploying Enterprise-Grade Wi-Fi Telephony](#) white paper and the [Best Practices Guide for Deploying SpectraLink 8020/8030 Wireless Telephones](#).

SSID, QoS and Security Settings

Configuring SSID, QoS and security settings through the CLI

Configure the SSID, QoS and security (WPA-PSK) settings of the wireless switch using the following commands:

```
RFS7000>en
RFS7000#conf t
RFS7000(config)#wireless
RFS7000(config-wireless)#wlan 1 enable
RFS7000(config-wireless)#wlan 1 ssid spectralink
RFS7000(config-wireless)#wlan 1 qos svp enable
RFS7000(config-wireless)#wlan 1 qos classification low
RFS7000(config-wireless)#wlan 1 encryption-type tkip
RFS7000(config-wireless)#wlan 1 dot11i phrase 0 12345678
```

To configure WPA2-PSK replace the last two lines in the above command sequence with the following:

```
RFS7000(config-wireless)#wlan 1 encryption-type ccmp
RFS7000(config-wireless)#wlan 1 dot11i phrase 0 12345678
```

Configuring SSID, QoS and security settings through the Web interface

1. Open the RFS7000 applet by entering the IP address of the wireless switch: <http://192.168.2.103>
2. In the navigation pane under **Network**, click **Wireless LANs**.
3. In the **Configuration** tab screen, select **WLAN1** and click the **Enable** button.
4. After enabling WLAN1 click the **Edit** button.

RFS7000 RF Switch

Network > Wireless LANs

Configuration | Statistics | WMM | NAC Include | NAC Exclude

Show Filtering Options << Page 1 of 9 Go >>

Index	Enabled	ESSID	Description	VLAN(s)	Authentication	Encryption	Independent Mode	QoS Weight
1	✓	spectralink	WLAN1	1	None	TKIP	✗	1
2	✗	102	WLAN2	1	None	None	✗	1
3	✗	103	WLAN3	1	None	None	✗	1
4	✗	104	WLAN4	1	None	None	✗	1
5	✗	105	WLAN5	1	None	None	✗	1
6	✗	106	WLAN6	1	None	None	✗	1
7	✗	107	WLAN7	1	None	None	✗	1
8	✗	108	WLAN8	1	None	None	✗	1
9	✗	109	WLAN9	1	None	None	✗	1
10	✗	110	WLAN10	1	None	None	✗	1
11	✗	111	WLAN11	1	None	None	✗	1
12	✗	112	WLAN12	1	None	None	✗	1
13	✗	113	WLAN13	1	None	None	✗	1
14	✗	114	WLAN14	1	None	None	✗	1
15	✗	115	WLAN15	1	None	None	✗	1
16	✗	116	WLAN16	1	None	None	✗	1
17	✗	117	WLAN17	1	None	None	✗	1
18	✗	118	WLAN18	1	None	None	✗	1
19	✗	119	WLAN19	1	None	None	✗	1
20	✗	120	WLAN20	1	None	None	✗	1

Filtering is disabled Page 9 of 9 loaded.

Buttons: Edit, Enable, Disable, Export, Global Settings, Help

Wireless Management Applet

5. To configure SSID, enter **spectralink** in the **ESSID** field.
6. To configure QoS, select the **Enable SVP** checkbox. This will prioritize voice packets as instructed by the SVP protocol.
7. Select **Low** from the **Access Category** drop-down list. This will cause all non-voice packets to get lower priority.

Network > Wireless LANs > Edit WLAN1

Edit

Configuration

ESSID: Description:

☐ Independent Mode (AAP Only)

VLAN ID: ☐ Dynamic Assignment

Authentication

☐ 802.1X EAP
☐ Kerberos
☐ Hotspot
☐ MAC Authentication
☒ No Authentication

Encryption

☐ WEP 64
☐ WEP 128
☐ KeyGuard
☒ WPAWPA2-TKIP
☐ WPA2-CCMP

Advanced

Accounting Mode: MU to MU Traffic:
☒ Answer Broadcast ESS MU Idle Time: seconds
☐ Use Voice Prioritization Access Category:
☒ Enable SVP MCast Addr 1:
☐ Secure Beacon MCast Addr 2:
 QOS Weight: NAC Mode:

Status:

8. To configure security, in the **Encryption** section select the **WPA/WPA2-TKIP** check box.
9. Click the **Config** button. The dialog box shown below will appear.
10. In the **Key Settings** section, enter **12345678** under **ASCII Passphrase**.
11. Click **OK**.

Network > Wireless LANs > Edit > WPA/WPA2-TKIP/CCMP

WPA/WPA2-TKIP/CCMP

☐ Broadcast Key Rotation

Update broadcast keys every (1800-86400) seconds

Key Settings

☒ ASCII Passphrase

Enter 8-63 ASCII characters

☐ 256-bit key

Enter 16 hex characters in each field

Fast Roaming (802.1x only)

☒ PMK Caching ☒ Opportunistic Key Caching ☐ Pre-Authentication

Status: